

Appl No. 10/611,315
Amdt. Dated May 18, 2006
Reply to Office Action of January 24, 2006

Attorney Docket No. 83394.0008
Customer No.: 26021

REMARKS

This application has been carefully reviewed in light of the Office Action dated January 24, 2006. Claims 1-8 remain in this application. Claim 1 is the independent Claim. It is believed that no new matter is involved in the amendments or arguments presented herein. Reconsideration and entrance of the amendment in the application are respectfully requested.

Specification Objection

The Title of the present Application was objected to for being non descriptive. In response, Applicant has amended the Title in accordance with the Examiner's suggestion. Reconsideration and withdrawal of the above objection are respectfully requested.

Art-Based Rejections

Claims 1, 3-4, and 7-8 was rejected under 35 U.S.C. § 102(b) over U.S. Patent No. 5,870,576 (Faraboschi). Claims 2, 5, and 6 were rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 6,691,305 (Henkel). Applicant respectfully traverses the rejections and submits that the claims herein are patentable in light of the arguments below.

The Faraboschi Reference

Faraboschi is directed to methods and apparatus for storing wide instruction words in compressed form and for expanding the compressed instruction words for execution. (See, Faraboschi; Col. 1, lines 14-16). According to Faraboschi, compressed instruction words of a program are stored in a code head segment of the memory, and code pointers are stored in a code pointer segment of the memory.

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Each of the code pointers contains a pointer to one of the compressed instruction words. Part of the program is stored in a instruction cache as expanded instruction word. (See, *Faraboschi; Abstract*).

The Henkel Reference

Henkel is directed to a method and apparatus for compressing and decompressing object code instructions that are included in a software program that executes on a computer system. (See, *Henkel*; Col. 1, lines 16-20). According to Henkel, the method includes extracting compressible instruction and data portions from executable code, creating a mathematical model of the extracted code portions, classifying the individual instructions in the extracted portions based upon their operation codes and compressing the instructions. (See, *Henkel*; *Abstract*).

The Claims are Patentable Over the Cited References

The present application is generally directed to micro controller that processes compressed codes stored in a memory.

As defined by independent Claim 1, a micro controller includes a CPU, performing processing in accordance with a program. The micro controller further includes a memory storing: compressed codes resulting from the conversion of program codes into variable length codes; an address conversion information specifying the head address of each group of grouped program codes; and a compressed code type information specifying, according to each group, the code length of each compressed code contained in each group. A compressed code processing part specifies, from a code address output by the CPU, an address conversion information and compressed code type information to be referred, using the specified address conversion information and the compressed code type

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information to determine the corresponding compressed code address, and reads the corresponding compressed code.

The applied references do not disclose or suggest the above features of the present invention as defined by the claims of present invention. In particular, applied references do not disclose or suggest, "an address conversion information, specifying the head address of each group of grouped program codes," as required by the claims of present invention. Moreover, the applied references do not disclose or suggest, "a compressed code type information, specifying, according to each group, the code length of each compressed code contained in each group," as required by the claims.

According to Faraboschi, an instruction word refers to a wide instruction word that contains a number of operations. Faraboschi discloses an instruction word which may contain zero to nine operations. For example, the instruction word 040, stored in 140003000-14000310 of the code heap segment (140), contains the operations W00, W02, W05, W06, and W07. The instruction word 043 contains no operations. (See, *Faraboschi*; Col. 4, lines 5-31; Fig. 2).

Applicant notes there are four bits in each of these operation fields, as indicated by the memory addresses storing the operation fields. (See, *Faraboschi*; Fig. 2, *Reference element 140, addresses 1400300, 14000304, 14000308...*). Faraboschi discloses the number of bits in each operation field may be different for a different computer system. However, Faraboschi does not teach or suggest the number of bits per operation field be modified during the operation of the computer system. (See, *Faraboschi*; Col. 4, lines 17-20).

Faraboschi teaches using six instruction words (040 – 045) containing a total of twelve operations (W00, W02,...W58). Because each of these instruction words

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might have a maximum of nine operation fields, storing these instruction words in uncompressed form would require 6x9 operation storage space. (See, *Faraboschi*; *Fig. 2, Reference element 100*).

Accordingly, *Faraboschi* teaches a method of compressing the instruction words by storing only the active operations, and not the empty operations. (See, *Col. 4, lines 58-67; Fig. 2, Reference element 140*). Applicant notes that according to *Faraboschi*, the instruction words are compressed, but not the operation fields. Each of the operation fields remains at four-bit long before and after the compression. Thus a instruction word cannot be said to be equivalent to a group of codes, and an operation equivalent to a code recited in independent Claim 1.

The Office Actions identifies that an instruction word constitutes a "code" recited in independent Claim 1. For example, the instruction word stored at address 14000300-14000310 constitutes a first compressed code. The instruction word stored at address 14000314-14000318 constitutes the second compressed code. (See, *Office Action; Page 3, Para. 8, lines 5-8 of that paragraph; Fig. 2, Reference element 140*).

The Office Action further identifies Reference element 152 of *Faraboschi* as constituting an address conversion information specifying the head address of each group of grouped program codes, recited in independent Claim 1. (See, *Office Action; Page 3, Para. 8, lines 10-14 of that paragraph; Fig. 2, Reference element 152*).

Applicant notes the pointers of Reference element 152 point to the head address in memory of each instruction word or code. For example, the first pointer of Reference element 152 points to address 14000300, the head address of the first instruction word or code. The second pointer points to address 14000314, the head address of the next instruction word or code. As noted above, the Office Action

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asserts that each instruction word corresponds to a "code" recited in independent Claim 1.

Accordingly, Applicant respectfully submits that the head address of each code cannot be said to be equivalent to the head address of each group of grouped codes, as required by independent Claim 1. Faraboschi thus does not teach or suggest a compressed code type information, specifying, according to each group, the code length of each compressed code contained in each group, as required by independent Claim 1.

Moreover, since Faraboschi does not teach or suggest a group of instruction words or codes, Faraboschi cannot be said to teach or suggest, "a compressed code type information, specifying, according to each group, the code length of each compressed code contained in each group," as required by the claims of the present invention.

The applied ancillary references are not seen to remedy the above deficiencies of Faraboschi.

Accordingly, the applied references do not teach or suggest the above features of the present invention as recited in independent Claim 1.

Since the applied references fail to disclose, teach or suggest the above features recited in independent Claim 1, those references cannot be said to anticipate or render obvious the invention which is the subject matter of that claim.

Accordingly, independent Claim 1 is believed to be in condition for allowance and such allowance is respectfully requested.

The remaining claims depend either directly or indirectly from independent Claim 1, and recite additional features of the invention which are neither disclosed

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nor fairly suggested by the applied references and are therefore also believed to be in condition for allowance, and such allowance is respectfully requested.

Conclusion

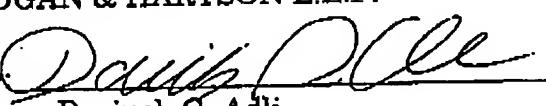
In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the application, as amended, are requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California telephone number (213) 337-6809 to discuss the steps necessary for placing the application in condition for allowance.

If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-1314.

Respectfully submitted,
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